SUCCESS STORY

Dublin Unified School District

EXECUTIVE SUMMARY

Challenge

Upgrade to new wired and wireless networks that empower digital teaching, enriched learning experiences, and effortless management.

Solution

- Brocade ICX 6610 Switches for aggregation at each school.
- Brocade ICX 6450 Switches stacked for access at each school.
- Brocade ICX 6650 Switches for aggregation.
- Brocade VDX 6740 Switches with Brocade VCS Fabric technology in the data center.
- Brocade VDX 6720 Switches with Brocade VCS Fabric technology in the data center.
- Brocade Network Advisor for simplified management.

Results

- Deployed a robust wired and wireless infrastructure designed to support learning initiatives into the next decade.
- Achieved high reliability, stability, and nonstop availability for student learning.
- Simplified network management dramatically.
- Future-proofed growth with scale-out architecture and increased capacity.

Free to Learn, Grow, and Adapt

Located 35 miles east of San Francisco, Dublin, California has consistently ranked as one of the fastest-growing cities in Alameda County. That growth is reflected in its school district, which expects to enroll more than 10,000 students in the 2015-2016 school year. The Dublin Unified School District (USD) currently includes seven elementary schools, two middle schools, one comprehensive high school, and one continuation high school.

Rapid growth was causing technology growing pains. District teachers wanted to expand their use of Internet resources in the classroom, but with the aging wireless network, lesson plans were disrupted when students could not access—or maintain access to—the wireless network. There also were a number of computer labs installed with limited bandwidth connections. The district's network backbone only supported 1 Gbps of bandwidth to each school, so network links quickly became congested and traffic slowed to a crawl.

"The existing infrastructure was clearly inadequate for our needs today," said Stephen Hanke, Superintendent of Dublin Unified School District. "We also have several strategic objectives to achieve, but with the old network, that wasn't going to be possible."

Balancing Technical and Educational Requirements

With online Common Core testing being rolled out, district administrators knew that the standards required all students to have immediate access to technology. Educational standards also require students to be able to read across multiple types of media, write, conduct research, and make digital presentations. To provide ubiquitous access, Dublin USD planned to migrate all of its schools to a 1:1 computing model—rolling out 10,000 Chromebooks—and standardize on cloud-based Google Apps for Education.

"We needed a robust wireless environment that could support expanded digital learning, Common Core testing, and broad access to online resources," said Custer Rodriguez, Network

WHY BROCADE

"The infrastructure is the critical layer as we integrate technology as a tool for learning. Our goal is success with Common Core and project-based learning. Technology supports instruction and should become invisible in the teaching and learning process. That's essentially where we're headed."

— Stephen Hanke, Superintendent at Dublin Unified School District

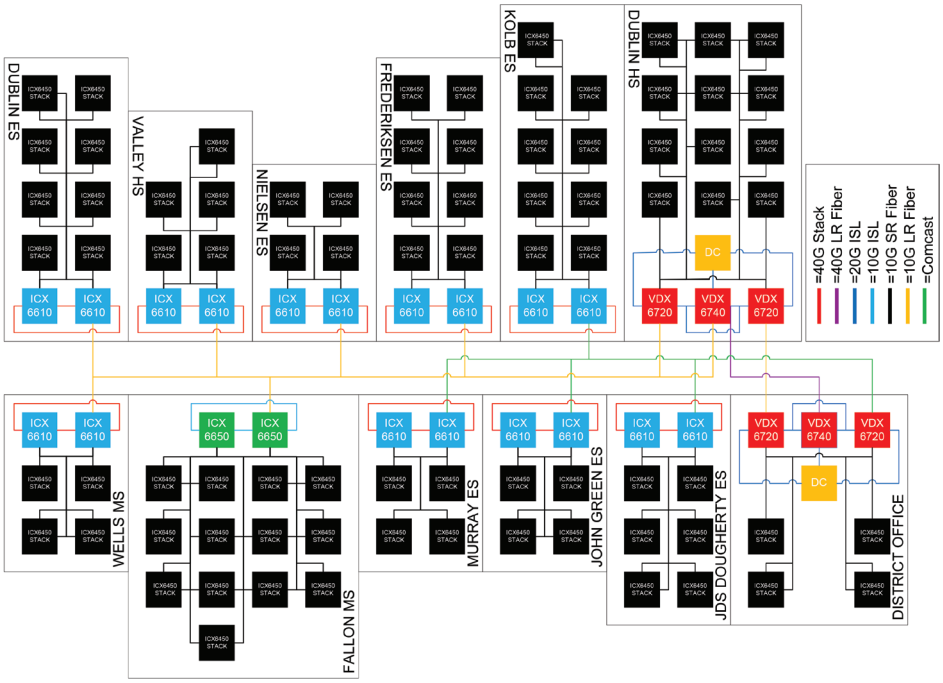

Figure 1: Dublin Unified School District Campus Network.

Administrator at Dublin Unified School District. "However, we also needed a wired network that would support the new wireless network and our future goals."

After conducting an extensive evaluation process and trying numerous wireless network options, Dublin USD chose a Ruckus wireless network based on its highly rated performance. Brocade has demonstrated industry leadership, high reliability, and ease of network management, and that lead Dublin USD to choose Brocade® network solutions for the underlying infrastructure.

A Dramatic Expansion

The Dublin USD network is based on two data centers—one in the district office and one at the high school—with fiber or cable connections to the elementary and middle schools. The data center at the district office hosts the Infinite Campus student information system and multiple instructional systems based on databases that interface with Active Directory. A 1-Gbps link also connects the data center to Alameda County's human resources and business system. A separate Layer 3 link connects Dublin USD to the California K-12 High Speed Network, which provides California educators, students, and staff with access to the Internet and other resources.

The new Brocade network increased the connection between the district office and high school data centers from 1 Gbps to 40 Gbps, as shown in Figure 1. It also deployed 10 Gbps connections to IDFs at each school. The Ruckus wireless network is deployed district-wide over the Brocade network.

Dublin USD replaced its data center switches with Brocade VDX® 6740 Switches and Brocade VDX 6720 Switches with Brocade VCS® Fabric technology. The Brocade VDX Switches support the district's VMware-based

virtualization strategy, while reducing space requirements and costs. Together with the Brocade VDX Switches, servers are virtualized and load-balanced between data centers. This approach has dramatically increased overall network reliability and use of resources. Brocade VCS Fabric technology enables Dublin USD to scale out as needed with management simplicity.

Brocade ICX® 6450 Switches play a critical role at the high school and district office data centers, where they are stacked to aggregate traffic to the Brocade VDX Switches. At each school, they are also stacked to provide a robust access layer, with Brocade ICX 6610 Switches performing aggregation. The Brocade ICX Switches are easy to manage and highly flexible. They deliver Layer 3 routing capabilities, superb capacity, outstanding performance, and Power over Ethernet (PoE) over all ports, which support Ruckus wireless access points and Voice over IP (VoIP) phones at each school—all for tremendous value. The largest middle school relies on Brocade ICX 6650 Switches for aggregation to support the large number of the Brocade ICX 6450 Switches deployed there.

Increased Wireless Reach and Power

Dublin USD deployed Ruckus Access Points (APs) across the district with two Ruckus wireless controllers configured for failover if necessary. Unlike the previous wireless solution that lacked range and power, the Ruckus network significantly reduced the number of APs required.

"We used just a little over half the number of APs with Ruckus compared to the old HP wireless network," said Rodriguez. "With Ruckus, we just installed one AP for every two classrooms. The performance has been great, and the range is definitely better."

Simpler Management Everywhere

Dublin USD also selected Brocade Network Advisor to simplify network management across the district. In the past, Rodriguez had to travel between schools several days per week to make sure that the network was operating properly. Now he can see the entire infrastructure, including the Ruckus APs, which are identified as devices attached to each switch port.

"Brocade Network Advisor is great," he said. "The interface is simple and now I can see everything right from my desk. If anything happens, we have immediate awareness. And if necessary, upgrading switches is super simple."

Ready for Class

The Dublin USD IT team replaced the entire wired and wireless network infrastructure in approximately two months. The installation went smoothly, allowing the district to distribute 10,000 Chromebooks before school ended for the summer. Beginning in fall 2015, Dublin USD achieved its 1:1 computing goal, with all students online. Any student can pick up any Chromebook, log in, access class materials, and access the Common Core testing capability, which resides as an app on the devices.

Nonstop Performance

"The large bandwidth increases opened everything up," said Rodriguez. "We immediately saw that everything was much faster and more stable. Now teachers can use whatever assets they want, because bandwidth is no longer an issue."

"The best feedback we have received is from our teachers, saying that the network just works," said Hanke. "They can rely it for instruction, and students have much better access to their coursework."

In fact, Dublin USD has increased its use of digital textbooks. Students don't have to carry textbooks back and forth between school and home, nor do they need to carry their computers. With the Google apps, Dublin USD students simply log in to access the cloud and do their work, whether they are at school or home.

Freedom to Grow and Adapt

Dublin USD expects the network to support its fast-paced growth for at least the next five years. Mobile carts on wheels in classrooms are replacing fixed computer labs. The high school has just been renovated, and the district has added multiple buildings and a new performing arts center. As the district grows, so does the network.

"Now everyone is using technology every day, said Rodriguez. "We're not even close to consuming our network capacity, but when we need to scale out, with Brocade we can simply add more switches to the stack and we're good to go. It's just great."

Moving to the Head of the Class

With its robust wired and wireless networks, Dublin USD has greatly accelerated achievement of its computing goals. The next step is to create a seamless integration between the technology, teaching, and learning styles.

"The infrastructure is a critical layer for success as we integrate technology as a tool for learning," said Hanke. "Our goal is success with Common Core and project-based learning. We believe that technology supports instruction and should become invisible in the teaching and learning process—that's essentially where we're headed."

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